

## Responses to Balance of Trade of Bangladesh through the Changes of Influencing Factors (GDP, TOT, FDI, ER, FR): An Econometric Analysis.

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**Abstract:** This paper aims to show the impacts of exchange rate fluctuation, GDP, Terms of trade, flow of foreign remittance and foreign direct investment on Balance of trade to analyze economic performance of Bangladesh. As an independent nation Bangladesh cannot claim that its BOP figure is satisfactory because since 1971 it's facing deficit in its Balance of trade. Export is the key to reducing trade deficit. So Trade liberalization could be a remedial instrument to improve its Export figure. Higher currency rate also plays a vital role to make a country's BOP negative. Though export figure of Bangladesh is somewhat satisfactory, it contains some factors which cause future anxiety. Bangladesh economy is branded worldwide with its high quality RMG products as well as strong manpower supply which bring large amount of remittance to its nations. But some recent political unrest along with geopolitical tensions and barriers continue to put a massive pressure on its BOP performance. The purpose of this paper is to study the past history of BOP performance of Bangladesh and to draw some suggestions to improve the conditions. This study uses 35 years' observations of GDP, TOT, FDI, ER and foreign remittance to estimate their impact on Balance of trade. On the basis of the observation, our suggestion is that Bangladesh should take some initiative to increase products and manpower to enlarge its remittance volume with special consideration to stabilize its political situation.

**Key Words:** Trade Balance, Exchange Rate, Terms of Trade, Remittance,  
Foreign Direct Investments, Balance of Payment

### Introduction

Balance of payments is an accounting record of all monetary transactions between the mother country and the rest of the world in a particular period. Balance of payments includes all visible and invisible transactions of a country during that period. This transaction includes payments for the country's export and import of goods, service, financial capital and financial transfers. It actually provides a picture of country's current demand and supply of the claims on foreign currencies and of foreign claims on its currencies.

It's a positive sign for a country if the current account shows the net amount of a country is earning means it's in surplus. On the other hand it should be a negative sign if it is in spending means spending. Since the independence, Bangladesh is facing an unfavorable balance of trade due to its have dependence on imports.

Along with import, there have other factors which effecting the figure of its balance of payment. Those are-

- Serious political unrest
- Corruption almost in every sector
- Huge import payments
- Slow production rate

- Fluctuation in oil prices due to the huge geopolitical tensions
- Higher spread in interest rate, which reduces private investment as well as foreign investment causes lower production means reduces export rate.
- Unstable Fiscal policy
- Depreciation of local currency against dollar that increases import cost
- High energy cost
- Lack of support to exporting industries
- Lots of restrictions in developed countries
- Global recession since 2008
- Lack of well-trained manpower

### Objective of the Study

Bangladesh is one of the promising developing countries of the modern world. Its recent development in the RMG sectors, CT sectors and agricultural sectors are quite satisfactory. After kicking out all of the political setbacks and barriers Bangladesh is still maintain around 6% growth rate target and it has huge remittance inflow from skilled manpower worked abroad and by exporting high quality RMG products. Despite all of these

achievements, Bangladesh can't be satisfied. It is known that the current world is heavily globalized and the developing nations along with developed nations are now in diehard competition for world marketplace.

The key objectives of this study are as follows-

- To show the impact of exchange rate fluctuation on Trade balance balance of payments
- To show the impact of FDI on Trade Balance
- To show the impact of remittance on trade balance
- To find out the impact of TOT on balance of trade
- To find out the impact of Trade linearization on export and import growth

### **Balance of Payments**

The balance of payments, which is known as balance of international payments encompasses all transactions a country's residents and its non-residents. When all components of BOP accounts are included they must sum to zero with no overall surplus or deficit.

Current account+ broadly defined capital account+ balancing item =0

For example, if a country is importing more than it exports, its trade balance will be in deficit, but the shortfall will have to be counterbalanced in other ways- such as by funds earned from its foreign investments, by running down central bank reserves or by receiving loans from other countries.

When all types of payments are included, the overall BOP accounts are stay in balance. However imbalance are possible on individual elements on balance of payments, such as the current account, the capital account excluding the central bank's reserve account, or the sum of the two.

A real balance sheet actually contains several sub headings under the principal divisions such as—

- Trade- buying and selling of goods and services
- Export- a credit entry
- Imports- a debit entry
- Net unilateral current transfers- a debit entry
- Trade balance-the sum of Exports and Imports
- Factor income-repayments and dividends from loans and investments
- Service payments- a debit entry

- Income receipts- a credit entry
- Factor income balance-the sum of earnings and payments

The international monetary fund (IMF) uses different set of definitions for the balance of payment accounts, which is used by the OECD and SNA (United Nations system of National accounts).

“Financial account” is the term which is used by IMF to cover the transactions which are under alternative definition, recorded in capital account and it is the main differences between them. Capital account is the term which is used by IMF, refer to a sub set of transactions that from a small part of the overall capital account. Such kind of transactions are clarified by IMF to establish an additional top level definition of the BOP accounts. As per the IMF, definition, the BOP identity can be written.

Current account + financial account + capital account balancing item = 0

### **Literature Review**

Terms of trade is an important subject matter for researchers of business and economics all over the world. Number of scholars have tried to define terms of trade and its impact on economy and the factors that impact terms of trade. Some important findings identified by different scholars on terms of trade are specified below:

Rose (1991) examined the empirical relation between real effective exchange rate and trade balance of major five OECD countries in the post-Bretton Woods era. Rose's study depicts the exchange rate as insignificant determinant of balance of trade.

The exchange rate expresses the national currency's quotation with respect to foreign ones. A country's exchange rate involves the relative price of the goods produced for the domestic market traded internationally. That is why the exchange rate system has a widespread impact on the price level of a country (Nurkse, Ragnar, 1944).

As for instance in 1997, when speculators mounted furious onslaught, Hong Kong Monetary Authority was forced to make huge US dollar sales to support its free floating rate regime. Again in 1998, the government attempted to defend the currency and avoid a bank crunch. The government was bound to be engaged in direct interventions in the stock market, futures market, and exchange market. Further, the government drew down its reserves to finance a budget deficit, effectively maintaining liquidity in the money market. The heavy-handed intervention was successful, the speculators experienced large losses, the pressure on the peg was relieved, and the Hang Seng Index made ultimately large profits for the Hong Kong Monetary Authority (World Bank, 2001).

Whatever the case may be, different countries adopt different exchange rate policies. Bangladesh, had a fixed exchange rate system in place since January, 3 1972. After more than 31 years, the Central Bank of Bangladesh (Bangladesh Bank) changed it into a floating exchange rate system in June 2003. Bangladesh has been pursuing a floating exchange rate system since then. Dr. Mirza Azizul Islam, the former advisor, Ministry of Finance of the Caretaker Government of Bangladesh, presented a paper in January 2003, right before the shift from fixed to floating regime, explaining the overall performance of the fixed regime and the probable implications of the floating regime on Bangladesh economy. He suggested that the experiences of other countries in the region show that floating regime generates greater volatility in exchange rates and this sort of uncertainty is likely to affect adversely the overall trade and investment climate which is already afflicted by many unfavorable elements in Bangladesh (See Islam, 2003).

As per the ‘Financial Sector Review(2006)’ of the central bank of the country, the major reasons of exchange rate policy covers: (i) export promotion; (ii) encourage inward remittances; (iii) keeping the price level stable, and (iv) preserve a variable account situation externally. As a result, all the publications and write-ups have illustrated both directly or indirectly the export-growth and import reduction as the key reasons of the exchange rate policy of the country.

Developing countries like Bangladesh should relax restrictions on imports more slowly than barriers to exports, according to research by Amelia Santos-Paulino and Professor Tony Thirlwall, published in the February issue of the *Economic Journal*. This is because it takes longer for exporters to respond to trade liberalization than it does for imports to flood in, potentially causing seriously disruptive balance of payments difficulties. (Cf. Hossain 2006)

Hossain and Alauddin (2005) examine the process of Bangladesh’s trade liberalization and its impact on the growth and structure of exports, imports, GDP and other macroeconomic variables with particular emphasis on export. By using econometric investigation based on the ARDL and the ARDL co-integration techniques they empirically found trade liberalization has had a positive impact on the growth, that is, both anti-export bias reduction and import-GDP ratio have significantly impacted on exports in the long run.

Kundan and Qingliang (2010) indicate that FDI had a positive impact on economic growth in Nepal. Using the Granger Causality test, Unit Root test and Co-integration test with data for the period 1980-2006, their results show that there exists a long-term relationship between the variable and

direction of causality runs from FDI to GDP growth rate.

Akhtaruzzaman (2005) works over the 1973Q1-2002Q2 period and identifies the variables, which are believed to generate inflation in Bangladesh. He finds that the exchange rate, money supply, and the deposit interest rate have statistically significant roles in explaining the inflationary process of Bangladesh.

The foreign remittance income is not only increasing foreign currency reserve but also playing a significant role to reduce poverty and to enhance the economic development of Bangladesh (World Bank, 2012). Bangladesh would be middle income country within 2021 depending on the foreign remittance income (Minister, Ministry of Expatriates’ Welfare and Overseas Employment, 2012).

According to Bangladesh Bureau of Statistics (BBS), in 2012, net export earnings from RMG is USD 11.287 billion, whereas in November, 2012 the earning from remittance is net USD 12.87 billion. But the government expects that the remittance income will cross USD 13 billion at the end of the year 2012 (Bangladesh Bank).

### **Balance Of Trade and Economy of Bangladesh**

Bangladesh is an emerging developing country. Its economy growing at a rate of 6.1% according to World Bank during the year 2012/2013. It’s per had income was \$1108 according to Bangladesh economic review in the same period.

According to ADB (2013) Gross domestic investment (GDI) in Bangladesh was growing at a faster pace. In 2013 GDI was 15.2% of its GDP. The growth rate of merchandise export was -3.4% and merchandise import was -0.1% of its GDP in the year 2013. That mean’s Bangladesh is facing a negative TB.

The TB balance of Bangladesh of Bangladesh was -42% of its GDP on that year 2013 (ADB). Its current account balance was 2.5 as a percentage of its GDP.

The prospect of Remittance is quite bright. In the year 2012/2013 remittance was reached to \$14461.15 million according to Bangladesh economic review. But aspect of FDI is not that good. Political calmness is needed to firing its economy.

### **BALANCE OF PAYMENTS OF BANGLADESH**

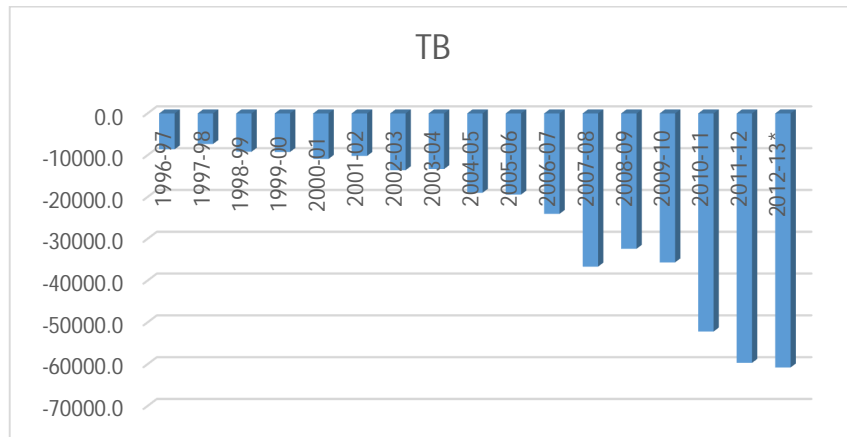
The country has been experiencing a negative Balance of trade over the years. The reason behind this decline in trade deficit has been a greater decrease in import than exports. Political violence over the year, weak ICT sector, lack of investment

environment, poor skill of worker has been playing a vital role in this poor situations. The picture of

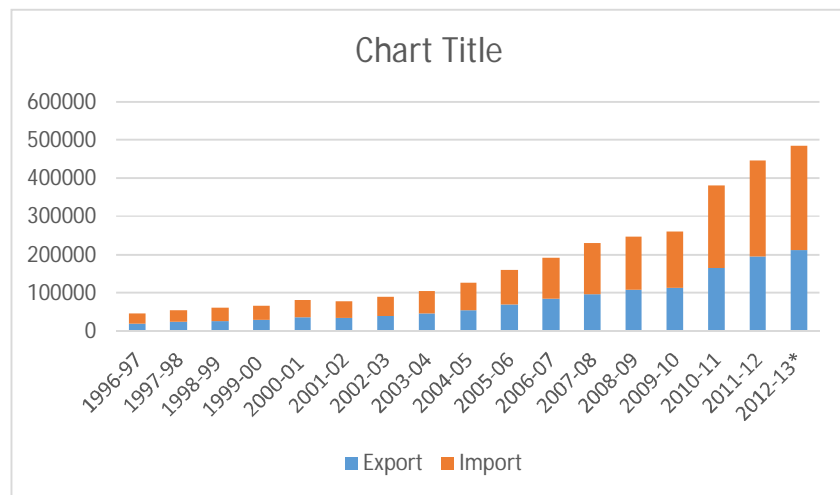
BOP conditions are given below-

Year	Export(TK in Crore)	Import(TK in Crore)	Trade Balance(TK in Crore)	Current Account(TK in Crore)
1996-97	18835.6	27436.3	-8600.7	-2352.9
1997-98	23466.9	30783.6	-7316.7	-1174.4
1998-99	25546.4	34708.1	-9161.7	-1892.6
1999-00	28869.6	38091.0	-9221.4	-491.5
2000-01	34599.6	45484.9	-10885.3	-5957.3
2001-02	34037.7	44206.2	-10168.5	922.0
2002-03	37587.2	51172.7	-13585.5	198.3
2003-04	45534.7	58847.7	-13313.0	1864.3
2004-05	53961.4	72945.2	-18913.8	-2355.4
2005-06	69900.8	89321.2	-19420.4	4790.1
2006-07	83205.1	107234.3	-24029.2	6413.8
2007-08	97110.1	133765.3	-36655.2	5495.8
2008-09	107195.0	139579.5	-32384.5	14505.3
2009-10	112345.1	147983	-35637.9	22956.1
2010-11	164159.2	216143.1	-52181.9	5275.3
2012-13	211643.0	272437.1	-60784.1	15233.9

**Figure 1: Trade Balance Scenario of Bangladesh**



**Figure 2 : Export and Import Trend in Bangladesh**



From the table given above it could be observed that Trade balance scenario of Bangladesh is not satisfactory. In 1997/98 the Trade balance was -7316.3 crore tk. but in 2012/13 the figure became huge (-60784.1). Since independence Bangladesh never experienced positive Trade balance figure. The current account figure was also negative till 2000/01. From 2001/02 to 2003/04 it remained positive. In 2004/05 Bangladesh again experienced negative current account. But now the current account is on the rise again and in 2012-13 the figure is 15233.9 crore TK.

### **Methodology of the Study**

There are several components which may affect trade balance of a country. BOP also have several components. Several types of econometrical tools have been used to check out those impact on TB in this study. The methodology and description are given below-

To show the effect of balance of Payment and other elements on trade balance of Bangladesh an Autoregressive model will be used. Data from several secondary source has been collected from year 1995/1996 to 2013/2014 (provisional). This

study will gathered annual, Time series data collected from different sources.

Log form was taken for all of the independent variable except dependent variables (TBt) by using proper econometric program. Log form didn't use to the TBt because some of the values of variable are zero. Since time series data was used in this study, so Unit Root Test and Co-integration Test should need to be check out. But sample size was not that big enough to carry out the Unit Root Test and Co-integration test. That's why Unit Root Test and Co-integration was not used in this study.

As a developing countries, collecting data from trustful sources is not an easy work. That's why careful concentration was given in the time of collecting data. From different trustful government institutions, concerned ministry, high quality research journal, international websites data were collected.

After then couple of statistical software were used (i.e. evIEWS 6.0 and SPSS 21) to carry on all of the econometrical tools. OLS method is a key for this study. Careful attention were given for maintaining all of the properties of OLS.

### **The Model**

The analysis explain the effects of GDP, Exchange rate(ER) and other factors on balance of trade (TB). The respective model of this study can be written as below-

$$TB_t = \beta_1 + \beta_2 GDP_t + \beta_3 ER_t + \beta_4 TOT_t + \beta_5 REM_t + \beta_6 FDI_t + e_t \dots\dots\dots(1)$$

Here,  $e_t$  is the error term. It means, there could have some other factors that may effects TB but not included in the model.  $\beta_2, \beta_3, \beta_4, \beta_5, \beta_6$  are the slope coefficient parameters of the respective variables.

So, the model is an autoregressive model which is a lin- log function as follows:

$$TB_t = \beta_1 + \beta_2 \ln GDP_t + \beta_3 \ln ER_t + \beta_4 \ln TOT_t + \beta_5 \ln REM_t + \beta_6 \ln FDI_t + e_t \dots\dots\dots(2)$$

### **Variable Definition**

**TB**= (X-M); Trade Balance of Bangladesh (In millions of dollar).

Source: Bangladesh Bank, Bangladesh economic review and <http://www.mincom.gov.bd/>.

**LnGDP**= log value Real GDP measured in millions of dollar. An economics assessment that involves quantifying the inflation adjusted market value of goods and services produced by an economic system during a given time.

Source: Statistical year book ( 1975- 2013), Bangladesh Economic Review.

**LnER**= Natural log of ER that's calculated against US dollar.

Source: Annual publications, Bangladesh Bank.

**LnREM**= Ln value of foreign remittance.

Source: Bangladesh Economic Review, [adb.org/statistics](http://adb.org/statistics)

**LnFDI**= log form of foreign direct investment. The amount of investment coming to the economy from the outside of the country.

Source: Bangladesh Economic Review and <http://www.mincom.gov.bd/>.

**LnTOT**= Natural log of TOT.

Source: <http://www.mincom.gov.bd/>.

### Expected Sign of the Coefficient Parameters

1.  $\beta_2 < 0$ : Bangladesh is a heavily import oriented country. If GDP increases, import will increase heavily. That means relation between Balance of trade and GDP is negative.
2.  $\beta_3 > 0$ : If central depreciate exchange rate export will increase. That's will create a positive trade balance.
3.  $\beta_4 < 0$ : because if TOT increase export and import both will hamper and it will create a negative balance of trade.
4.  $\beta_5 < 0$ : expected to be negative because if remittance flow is increased, demand of more import will also increase.
5.  $\beta_6 > 0$ : If FDI is flowing heavily, balance of trade will automatically become positive.

### Empirical Analysis

After employing ordinary least square method (OLS) following results were estimated—

*Table: Regression Results*

Variables	Coefficient	St. Error	t- statistics	Prob.
lnGDP	-7988.579	1581.539	-5.051143	0.0002
lnER	3791.349	5244.287	0.722949	0.4825
lnTOT	-519.0373	5542.967	-0.093639	0.9268
lnREM	-1029.056	449.3333	-2.290183	0.0394
lnFDI	725.9477	410.7423	1.767404	0.1006
R <sup>2</sup> =0.885414				
Adjusted R <sup>2</sup> = 0.841342				

From the above table it can be seen that all the variables are complete satisfactory. The p- value for all variables are quite acceptable. All the variables gained expected sign as we explained already in above. The coefficient of GDP is -7988.579 explaining that if GDP increase demand for foreign goods (means import demand) will also increase. Relative t-statistics is -5.051143, which is also acceptable. On the other hand, coefficient of ER is 3791.349 means, for a 1% depreciation in ER will increase the amount of export. That's will keep positive trend on BOT. Similarly, for a 1% increase in FDI will increase export demand. But coefficient of TOT and REM are showing negative value implying that If TOT increase export will reduce and for positive trend of REM demand of import will also increase. t-statistics are also supporting this idea with the value of -0.094 and -2.29 respectively. 39

### Estimated Model

After applying OLS method our model can be explained as follows—

$$TB = \beta_1 - 7988.58\beta_2 + 3791.35\beta_3 - 519.04\beta_4 - 1029\beta_5 + 725\beta_6 \dots\dots\dots(3)$$

### Summary of the model

R-squared	Adjusted R-squared	F-statistic	Prob(F-statistic)	Akaike info criterion	Schwarz criterion	Hannan-Quinn criter.	Durbin-Watson stat
0.885414	0.841342	20.09036	0.000011	16.96344	17.26168	17.01391	2.379445

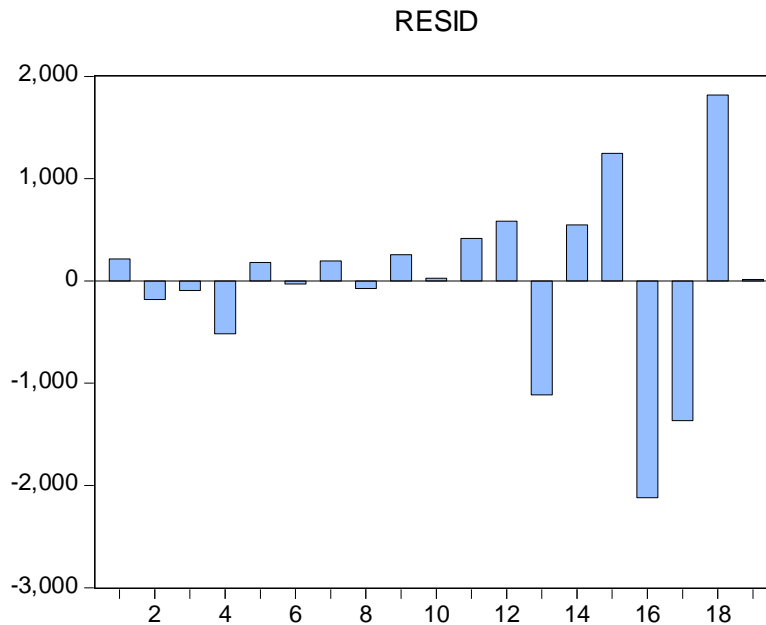
a) **Explanatory Variable: lnGDP, lnER, LNTOT, lnREM, lnFDI**

b) **Dependent Variable: TB**

From above table it's clear that, the fitted regression line is very much satisfactory. 88% of the variation in TB can be explained by the explanatory variable lnGDP, lnER, lnTOT, lnREM and lnFDI.



This picture is also clear from the following regression graph—



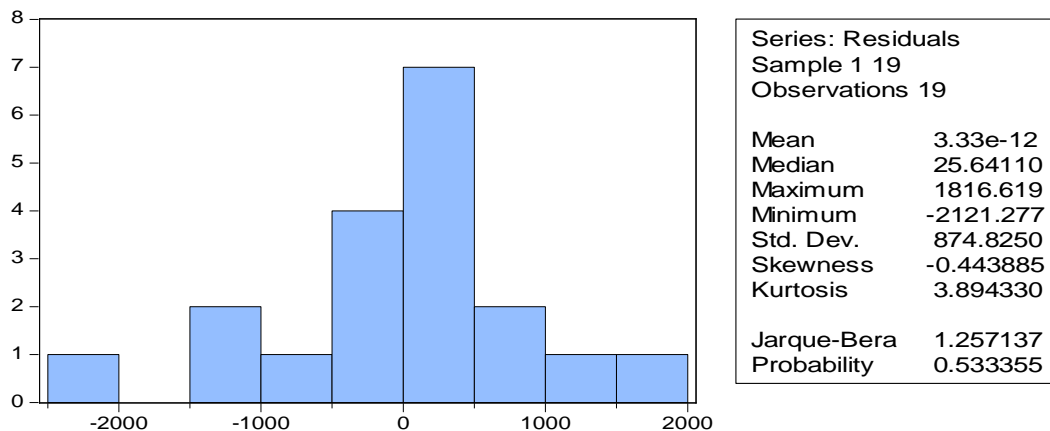
### Hypothesis

Null Hypothesis;  $H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6$

Alternative Hypothesis;  $H_1: \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6$

From above table, it is quite clear that, the calculative value for F is 20.10 whereas the critical value of F-statistics at 5% significance level is 3.32 and at 1% significance level is 5.39. So null is straightly rejected. That means any of the  $\beta$  parameters should have some short of effect on TB. That is, the estimated multiple regression model is significant.

### Normality test



Different tests are used in determining normality. Mr. Jarque Bera(1980) developed a statistical method which is now mostly used method in research purpose. From the above table it is clear that the value of JB is 1.26 along with probability 0.54 which means the data is normally distributed according to the normality preconditions.

### Test of Heteroskedasticity

Heteroskedasticity is essentially a sample phenomenon, arising out of largely non-experimental data collected in the most social sciences. Although BLUE the OLS estimators have large variances and covariance, making precise estimation difficult in the presence of heteroskedasticity, we do not have one unique method of detecting it or measuring its strength. Though there have lots of method for triggering heteroskedasticity, we used white Heteroskedasticity-Consistent standard errors method.

*White Heteroskedasticity-Consistent Standard Errors & Covariance:*

	Coefficient	Std. Error	t-Statistic	Prob.
C	19274.92	40560.70	0.475212	0.6425
LNGDP	-7988.579	1906.233	-4.190768	0.0011
LNER	3791.349	5685.285	0.666871	0.5165
LNTOT	-519.0373	5326.069	-0.097452	0.9239
LNREMITTANCE	-1029.056	495.4285	-2.077102	0.0582
LNFDI	725.9477	306.9420	2.365097	0.0342
R-squared	0.885414			
Adjusted R-squared	0.841342			

This is quite clear that this study is totally free from heteroskedasticity problem. All t-statistics and p-value are quite significant.

**Policy Implementation and Suggestions**

Bangladesh has to take some initiative to upgrade the current situation of the balance of payment. Those policies can help to increase export and as well as attract foreign exporters to invest. The policies also emphasizes on the increase of remittance comes from the expatriates and how to improve their quality.

1. To promote export, Bangladesh government can devalue the currency. With devaluating the currency foreign buyers will be encouraged to buy her products which eventually can enlarge its export volume.

2. Remittance from expatriates is the one the key source of Bangladesh foreign reserve. They have to take some progressive initiatives to upgrade the situation such as:

- Develop a skillful workforce who is capable of technical work in overseas.
- Maintaining a reciprocal diplomatic relationship with countries where it can export its workforce.
- Close monitoring of the movement of expatriates is very important so that the positive image of workforce remain constant.
- Attention to the expansion of the technical education in all stages can create a technically sound workforce.

3. An investment friendly environment can attract foreign investors to choose the country as a field of their foreign investment.

4. USA is the biggest market of our exporting goods. A comprehensive diplomatic relationship is very important to remove the quota on Bangladeshi goods as well as to open the door of GSP advantage.

5. Expansionary fiscal policy has to be taken to booming the economy.

6. All barrier and obstacle need to be removed.

**Suggestions:**

- Positive balance of payment represents that export is higher than import. If Bangladesh increases its production the surplus can be exported.

- Bangladesh should introduce new program for improving her balance of payment which can work as a supplementary of IMF and World Bank program.

- Along with the surplus production, an updated export and marketing policy is also important to reach a positive balance of payment.

- Proper infrastructural development can ensure the continuity of production. Frequent breakage in production process harms productivity and incurs loss. Therefore, Govt. should give attention to its infrastructural development.

-Now it has become very important for our ruling government to maintain proper negotiation with different clients and other developed countries to have free access of Bangladeshi goods.

-We have to ensure a stable political and economic situation where different bodies associated with export development sector can work together with high coordination.



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